

Remarks:

Claims 1, 2, 4, 7-11, 13-20, 24-29, 32-34, and 37 -- 39 are pending.

Claims 14-20, 24-29, 32-34, 37, and 38 are withdrawn.

Claim 1 was amended to incorporate the limitations of claim 39, and make it clear that the claimed method includes the grafting onto the fluoropolymer the graftable metal salt. Claim 29 has been cancelled without prejudice. This amendment is further supported by original disclosure at page 12, lines 25 and 26 of the Substitute Specification.

It is believed that no new matter is added by these amendments.

Declaration

A Declaration under 37 CFR 1.132, by inventor Anthony Bonnet is attached, discussing how the claimed invention is novel and unobvious over the cited art.

Response to the Examiner's "Response to Augments"

1) The Examiner only argument against Applicant's remarks is that one cannot show non-obviousness by attacking references individually. Yet, proper 35 U.S.C. §103 analysis must show that each of Applicant's claim elements exist in at least one reference, and that there is at least some motivation to try combining the references. The cited references together fail to teach or suggest Applicant's claimed method for stabilizing a fluoropolymer grafted with a graftable compound by also grafting onto the fluoropolymer a graftable metal salt.

Applicant does not see anything in the reference that teaches or describes radiation grafting onto a PVDF of BOTH a) a graftable compound with a polar functional group, and b) a graftable metal salt.

The Dahl reference (WO 90/15828) teaches radiation grafting ETFE with ethyl acrylate (Example 4). An antioxidant (IRGANOX 1010) is used as a stabilizer. IRGANOX 1010 is neither a metal salt, nor is it graftable onto the ETFE.

The Dahl reference describes a problem similar to Applicant's solved problem -- the radiation grafting of a carboxylic acid to a fluoropolymer in the presence of a stabilizer -- with the problem of destabilization (seen as yellowing) during further processing. Applicant solved this problem by additionally radiation grafting a graftable metal salt onto the fluoropolymer. This problem, or its solution is neither taught or suggested in Dahl. Since the Dahl reference does not recognize this as a result-effective variable, it cannot be optimized by routine experimentation. (MPEP 2144.05)

The Rice reference (US 1936994) uses sodium undecylenerate as a stabilizer for a rubber latex prior to crosslinking by heat. Rice does not teach or suggest fluoropolymers, fluoropolymer that have been radiation grafted, radiation grafting (nor any radiation, nor any grafting).

The Gotcher reference (US 4353961) is cited only to show that ETFE and PVDF are functional equivalents for the purpose of melt-processing wire casing. Applicant agrees that ETFE and PVDF are both melt-processible fluoropolymers, though the Gotcher reference teaches or suggests nothing of any radiation grafted fluoropolymer, nor its stabilization by use of a radiation grafted metal salt.

The Kotliar reference (US 4,886,689) described bonding an E-CTFE to a polyolefin by use of an adhesive that grafts to the E-CTFE during heating. (Col. 8, lines 40-60). Any grafting in the Kotliar reference is done by heat (not by radiation), is done to improve adhesion (not for stabilization), and any grafted additive is not a radiation-graftable metal salt.

Conclusion: According to MPEP 2143.01, the fact that references can be combined or modified is not sufficient to establish prima facie obviousness, unless the prior art also suggests the desirability of the combination. (MPEP 2143.01)

The Examiner has painfully taken many unrelated references from unrelated art areas, teaching a multitude of different methods for different purposes. Picking and choosing specific elements from various prior art references to create the claimed invention is not proper §103 analysis. Applicant contends that the obviousness rejection in this case is a classic example of hindsight, in effect using Applicant's claims as a template on which selected bits of prior art teachings can be assembled. This is not a proper basis for rejection of claims. "One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." In re Fine, 5 U.S.P.Q. 1596, 1600 (Fed. Cir. 1988).

Further, even with the Examiner's picking and choosing, there is still a failure to show any radiation grafting of a graftable metal salt onto any fluoropolymer, much less onto PVDF. Only one of the references cited by the Examiner deals with radiation grafting (Dahl), and that merely shows the problem in the art that is solved by Applicant's invention – involving a better stabilizer (radiation graftable metal salt) for radiation-grafted compounds on a PVDF. The only art using a metal stabilizer (Rice) teaches or suggests neither grafting, nor fluoropolymers, nor irradiation.

Most of the cited art involved the use of heat grafting. Applicant's method involves a first heat blending step, and a latter irradiation step. If Applicant's grafting were heat-grafting, then the grafting would occur during the melt-blending operation, and not be better controlled during the separate, latter irradiation step.

Rejections under 35 U.S.C. § 103

Claims 1, 2, 4, 7-11 and 13 stand rejected under 35 U.S.C. § 103(a) as obvious over WO 90/15828 (Dahl) in view of U.S. Patent No. 1,936,994 (Rice), and Gotcher. Applicants respectfully traverse these rejections for the reasons presented herein. As described above, none of the references alone, nor the combination of all references teaches or suggests all of Applicant's claim limitations, as amended, and therefore the references together fail to present a *prima facie* case of obviousness.

Dahl

The Dahl reference teaches the grafting of ETFE with ethyl acrylate. However Dahl fails to teach or suggest PVDF polymers or graftable metal salt stabilizers. The Dahl reference in fact teaches only the problem Applicant has solved in the presently claimed invention – a better means to stabilize a grafted fluoropolymer against destabilization, especially during further (thermal) processing. In Example 4 (page 16) a phenolic inhibitor is added prior to irradiation grafting.

The Dahl reference Example 4 includes a phenolic inhibitor, similar to the optional antioxidant stabilizer of Applicant's claims. There is no teaching or suggestion in Dahl of Applicant's required graftable metal salt for the purpose of stabilization. Nor does the Dahl reference teach or suggest the need for a stabilizer that is chemically attached to the polymer backbone, but suggests only stabilizers that have no attachment to the fluoropolymer polymer backbone.

Rice

The Rice reference teaches adding sodium undecylenate (as a stabilizer) to a rubber latex prior to vulcanization.

The Rice "rubber" is never taught or suggested to be a fluoropolymer. Moreover, a "rubber" is not a thermoplastic (as in Dahl or the present invention). So the Rice "rubber" teaches away from both Dahl and Applicant's claims.

The Rice stabilizer is added to a creamed latex (aqueous dispersion). The Dahl reference and Applicant's process involve blending in a melt -- so Rice teaches away from Applicant's claims, and cannot be combined with the Dahl different technology.

Further, Rice teaches a vulcanization (crosslinking) process. This teaches away from Applicant's grafting process.

The Rice reference mentions sodium undecylate as an emulsion stabilizer. This stabilizer is not used with a grafted fluoropolymer, and there is no teaching or suggestion of radiation grafting of the stabilizer.

Accordingly, Rice fails to remedy the deficiencies of Dahl.

Gotcher

The Gotcher reference is described in the comments above. The Gotcher reference teaches a crosslinking reaction that occurs by adding a crosslinking agent after a fluoropolymer article is formed, then followed by irradiation. Applicant claims a process that involves grafting, not cross-linking, and Applicant's graftable metal salt is added before forming the blend into an article, powder or granule.

The Gotcher reference fails to heal the deficiencies of Dahl or Rice, to teach or suggest all of Applicant's claim limitations.

Dahl, Rice, Gotcher, Kotliar

Claim 39 stands rejected under 35 U.S.C. § 103(a) as obvious over WO 90/15828 (Dahl) in view of U.S. Patent No. 1,936,994 (Rice), and Gotcher (US 4353961) and further in view of Kotliar (US 4,886,689). Applicants respectfully traverse these rejections for the reasons presented herein.

The Dahl, Rice, and Gotcher references are discussed above, and together fail to teach or suggest all of Applicant's claim limitations. The Kotliar reference is cited as a secondary reference to teach that additives can be grafted onto a fluoropolymer-polyolefin. The additives in Kotliar are "long chain aliphatic groups having end groups reactive toward the halogen carbon bond of the fluoropolymer", Col. 8, lines 51-56 – not metal salts. "reactive groups" is illustrated by amines, thiols, or phenols – Col. 8, lines 55 and 56. The reactive groups of Kotliar are not those claimed by Applicant as graftable metal salts, nor are they the compound containing a single C=C bond and a polar group. The Kotliar additives are grafted by heat, not by irradiation. Since

Applicant's method involves a first melt-blending, followed by a controlled irradiation, any heat-grafting additive of Kotliar would be grafted in the un-controlled melt-blending step, and thus there would be no irradiation grafting. There is also no teaching or suggestion in Kotliar of irradiation grafting of both a compound having a C=C double bond and a functional group, plus a graftable metal salt.

Conclusion:

Kotliar, Dahl, Rice, and Gotcher, together fail to teach or suggest the existence of two different grafting moieties. Applicant claims a process for grafting both a compound having a C=C double bond and a functional group, plus a graftable metal salt as a stabilizer. For all of the foregoing reasons, Applicants respectfully request reconsideration and allowance of the claims. Applicants invite the examiner to contact their undersigned representative if it appears that this may expedite examination.

Respectfully submitted,



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